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ABSTRACT

This document reports the results of a survey on the use of microcomputers for classroom instruction in New York state school districts, which was conducted as a project of the steering committee of the New York Statewide Instructional Computing Network (SICN), an organization of New York educators designed to provide a means for sharing information and materials and to serve as a forum for articulating related statewide policy issues. The description of survey results follows the survey format, focusing on (1) the number of students and teachers using microcomputers; (2) the availability and acquisition of microcomputers and peripheral equipment; (3) the development of microcomputer software/courseware materials; and (4) school district efforts to evaluate the effectiveness of computers in the classroom and/or publish newsletters in this field. Specific topics addressed include microcomputer repair, instructional and management applications, and evaluation. Appendices include a copy of the survey questionnaire and a roster of SICN delegates. Twenty-one data tables display results. (Author/LMM)

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STATEWIDE INSTRUCTIONAL COMPUTING NETWORK

"For Use of Computers in Instruction"

in cooperation with

NEW YORK STATE EDUCATION DEPARTMENT ALBANY, NY

ED226726

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REPORT

ON THE

STATEWIDE INSTRUCTIONAL COMPUTING NETWORK'S

1ST ANNUAL SURVEY

OF

INSTRUCTIONAL COMPUTING PRACTICES/PLANS

OF

NEW YORK STATE SCHOOL DISTRICTS

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OCTOBER 1982

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PREFACE

The Statewide Instructional Computing Network (SICN) is an outgrowth of a grass roots effort on the part of educators in New York to cope with the myriad implications attending the introduction of instructional technology into classrooms across the state. Responding to an urgent need to facilitate communications among school districts regarding instructional computing, each BOCES District Superintendent and Large City Superintendent designated one representative to attend a meeting in May 1981 for the purpose of creating a Statewide Network.

Working in close partnership with the New York State Education Department's new Center for Learning Technologies, SICN seeks to provide school districts with a means for sharing information and materials and to serve as a forum for articulating statewide policy issues related to instructional computing. The work of SICN is divided up among six sub-committees (Computer Literacy, Hardware/Technology, Information Dissemination, Inservice Education, Political Action, and Software/Courseware) and coordinated through a twenty-member Steering Committee (A current roster of SICN delegates is included in Appendix B).

The Network's 1st Annual Survey of Instructional Computing Plans/Practices in New York State School Districts is a project of the SICN Steering Committee. The survey seeks to make baseline information about the use of microcomputers for classroom instruction available to practitioners and policy makers throughout the state. Accordingly, this report is being distributed widely to School Superintendents, Board of Education Presidents, BOCES District Superintendents*, State Education Department officials and key legislative officials.

*(including Buffalo, New York, Rochester, Syracuse, Yonkers)

Obviously, an undertaking of this scale would not have been successfully completed without the support and cooperation of many more people than can adequately be acknowledged here. I would like to particularly acknowledge, however, the on-going encouragement and support of the SICN Steering Committee members who conceived and contributed greatly to the survey. In addition, Mr. Lawrence Page, Director of Instructional Computing in the Syracuse City School District, made his facilities available and adopted software for storage and retrieval of the survey results. Mr. Paul Harris, Planning and Research Specialist at the Oswego BOCES, supervised the processing of the survey results and summarized the survey findings. Most important, thanks should be given to the people who completed and returned the 580 survey questionnaires for making this project a significant one.

The Center for Learning Technologies in the New York State Education Department deserves special thanks for undertaking the printing and distribution of this report.

Dr. Burton Ramer, Chairperson
Statewide Instructional Computing Network
District Superintendent
Oswego County BOCES
Mexico, New York 13114

TABLE OF CONTENTS

	Page
PREFACE	i
TABLE OF CONTENTS	iii
LIST OF TABLES	iv
INTRODUCTION	1
THE SICN SURVEY	3
NEW YORK STATE MAP SHOWING COUNTY, BOCES AND JOINT MANAGEMENT TEAM REGIONS	4
MICROCOMPUTER UTILIZATION	7
MICROCOMPUTER ACQUISITION	14
PERIPHERALS	17
MICROCOMPUTER REPAIR	20
SOFTWARE/COURSEWARE DEVELOPMENT	22
INSTRUCTIONAL APPLICATIONS	24
MANAGEMENT APPLICATIONS	26
EVALUATION AND INFORMATION	27
APPENDIX A - STATEWIDE INSTRUCTIONAL COMPUTING NETWORK 1st ANNUAL SURVEY QUESTIONNAIRE	
APPENDIX B - ROSTER OF DELEGATES TO THE STATEWIDE INSTRUCTIONAL COMPUTING NETWORK	

LIST OF TABLES

		Page
Table 1:	School District and BOCES Responses to SICN Survey	3
Table 2:	Number of BOCES by School District Response Rate by Region	5
Table 3:	Number of Students Using Microcomputers (Includes all 551 districts)	7
Table 4:	Number of Teachers Using Microcomputers (Includes all 551 districts)	8
Table 5:	Number of Students Using Microcomputers (Includes 310 school districts reporting for all 3 years)	9
Table 6:	Number of Teachers Using Microcomputers (Includes 322 school districts reporting for all 3 years)	9
Table 7:	Percent Distribution of School Districts by Number of Students Using Microcomputers, 1981/82 to 1983/84	10
Table 8:	Percent Distribution of School Districts by Number of Teachers Using Microcomputers, 1981/82 to 1983/84	11
Table 9:	Number of BOCES Students Using Microcomputers	11
Table 10:	Number of BOCES Teachers Using Microcomputers	12
Table 11:	Number of Students Using Microcomputers - Big 5 Cities	12
Table 12:	Number of Teachers Using Microcomputers - Big 5 Cities	13
Table 13:	Availability and Planned Acquisition of Microcomputers by Type	14
Table 14:	Availability and Acquisition of Microcomputers	15
Table 15:	School District Peripheral Equipment	17
Table 16:	BOCES Peripheral Equipment	18
Table 17:	Software/Courseware Development Patterns	22
Table 18:	Level of Satisfaction with Software/Courseware Development	23

List of Tables (continued) Page

Table 19: Elementary School Instructional Computing Applications (Rank Ordered) 24

Table 20: Secondary Instructional Computing Applications (Rank Ordered) 25

Table 21: Management Applications for Microcomputers 26

INTRODUCTION

The Statewide Instructional Computing Network (SICN) 1st Annual Survey of Instructional Computing Practices/Plans of New York State School Districts (hereinafter referred to as the SICN Survey) was the brainchild of the SICN Steering Committee. Meeting in February 1982, members of the SICN Steering Committee determined that a survey of New York State school districts should be conducted to identify the status of microcomputer hardware acquisition, software/courseware development, and inservice programming. With rapidly changing technology in commercially available microcomputer hardware and software, baseline information on how schools are using microcomputer technology in the classrooms was deemed essential. This data was needed by SICN to advance its objectives in developing information for teachers, guidelines for inservice training programs, procedures for software/courseware evaluation, and a knowledge base for school district, regional, and statewide planning.

In March, the SICN Steering Committee reviewed a preliminary draft of the survey, offering numerous suggestions for refinement. A final draft of the survey received limited pilot testing in mid-April and the final survey instruments were distributed during May 1982. The final survey was distributed to school superintendents via their BOCES District Superintendents, except in the case of the "Big-5" city school districts. It was requested that the BOCES District Superintendents gather the completed surveys from their component school districts and return them to the Oswego County BOCES during June.

By June 15, 360 school districts had responded to the survey and a preliminary analysis of selected survey questions was prepared for the SICN Steering Committee. A telephone follow-up ensued targeting non-responding school districts via their BOCES and extending the response deadline to July 15. At the time the data collection was cut off in late August, a total of 580 responses had been received, representing 551 (75.9%) of the state's 726 public school districts, 24 (55.6%) of its 44 BOCES and all of the "Big 5" city school districts.

This report summarizes the SICN Survey results starting with an analysis of the survey sample. The description of survey results follows the survey format, focusing on: 1) the number of students and teachers using microcomputers, 2) the availability and acquisition of microcomputers and peripheral equipment, 3) the development of microcomputer software/courseware materials, and 4) school district efforts to evaluate the effectiveness of computers in the classroom and/or publish newsletters in this field. Finally, to assist the reader in interpreting the information presented, a copy of the Survey Questionnaire is included in Appendix A.

The names and addresses of inservice personnel being used were collected in the survey (Question 10), but are not reported here. These names have been referred to the SICN Inservice Subcommittee which will use them as a basis for developing a statewide model for inservice training in the area of microcomputer technology. Similarly, the names and titles of school district personnel responsible for planning, coordinating, supervising, and/or evaluating instructional computing (provided in response to Question 11) are being retained for future use by the SICN Network.

THE SICN SURVEY SAMPLE

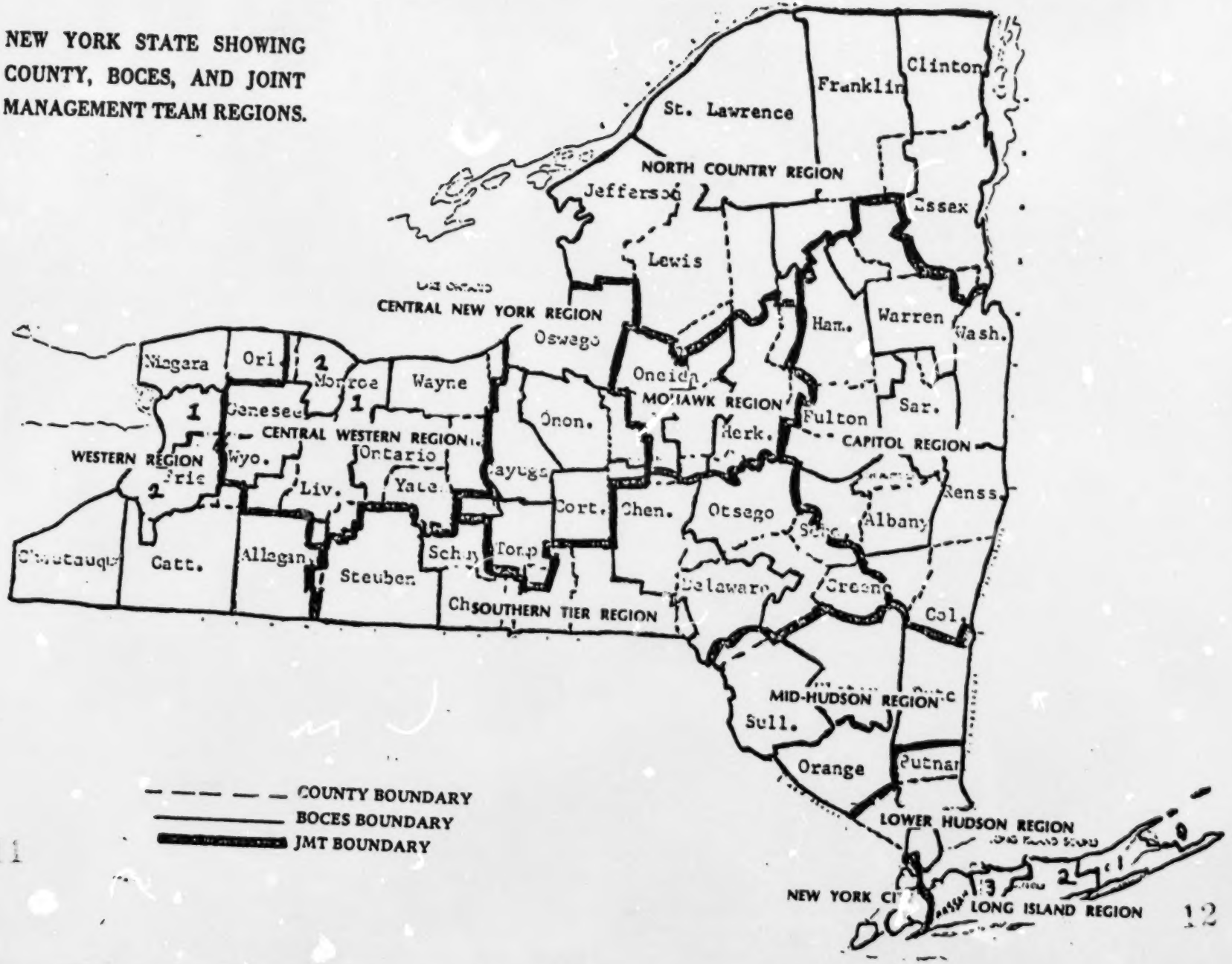
The response of New York State school districts to the State Instructional Computing Network's survey is both heartening and a source of considerable gratification. A total of 580 questionnaires were returned, representing nearly three-fourths (74.8%) of the population surveyed (731 school districts plus the 44 BOCES). Table 1 displays the response rates of school districts and BOCES to the survey on the basis of New York State's ten Joint Management

Table 1: School District and BOCES Responses to SICN Survey
(By JMT Region as of 7/30/82)

JMT Region	School Districts		BOCES	
	No. Responses / No. Districts	% Responding	No. Responses / No. Districts	% Responding
Long Island Reg.	81/128	63.28%	0/4	--
Lower Hudson Reg.	48/62	77.42%	1/3	33.3%
Mid-Hudson Reg.	33/52	63.46%	3/4	75.0%
Capitol Region	77/98	78.57%	1/5	20.0%
North Country Reg.	63/66	95.45%	4/4	100.0%
Mohawk Region	33/37	89.19%	1/3	33.3%
Central New York Reg.	34/50	68.00%	4/5	80.0%
Southern Tier Reg.	58/78	73.36%	2/5	40.0%
Central Western Reg.	57/67	85.07%	4/5	80.0%
Western Region	67/88	76.14%	4/6	66.7%
Big Five Cities	5/5	100.00%	--	--
Statewide	556/731	76.06%	24/44	54.6%

Team regions (see Map). The percentage of school districts responding to the survey ranged from a low of 63% in the Long Island and Mid-Hudson regions to 95% in the North Country area. The percentage of BOCES responding ranged from 0 to 100%, exceeding two-thirds of the BOCES in half of the Joint Management Team regions.

NEW YORK STATE SHOWING COUNTY, BOCES, AND JOINT MANAGEMENT TEAM REGIONS.



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Within each BOCES area, the percentage of school districts responding also ranged from 0 - 100%. There were no responses from two BOCES areas, while nine BOCES areas had a 100% response rate. More generally, as shown in Table 2, nearly two-thirds of the BOCES areas across the state had a

Table 2: Number of BOCES by School District Response Rate by Region

JMT Region	0-50%	51-75%	76-90%	90-100%
Long Island Region	1	1	1	1
Lower Hudson Region			3	
Mid-Hudson Region	1	1	1	1
Capitol Region		2	2	1
North Country Region			1	3
Mohawk Region			1	2
Central New York	2		2	1
Southern Tier Region	1	2		2
Central Western Region		1		4
Western Region		3	3	
Statewide No.	5	10	14	15
%	11.4%	22.7%	31.8%	34.1%

response rate of 75% or higher. Only 5 BOCES areas were represented by less than half of their component school districts.

No analysis was performed to identify the extent to which the SICN survey sample is statistically representative of school districts or BOCES in New York. While the use of the BEDS coding system for identifying the survey responses provides a good basis for such analysis, the sheer magnitude of the sample is persuasive. It is likely that the school districts responding to the SICN Survey are more involved in and/or committed to instructional

computing than those not responding. Still, the survey results speak loudly because they are based on three-fourths of the school districts. Though perhaps not generalizeable, the SICN Survey provides a solid indication of instructional computing trends in New York State's public schools.

MICROCOMPUTER UTILIZATION

More than a quarter of a million students and over 13,000 teachers were identified as using microcomputers in 1981/82 according to the 580 school districts and BOCES which responded to the SICN Survey. Survey responses indicate that microcomputer utilization will increase nearly 80% by 1983/84, the growth occuring equally among students and teachers. The analysis which follows corsiders first the 551 school districts responding to the survey, then BOCES responses and finally the "Big 5" city school district responses.

SCHOOL DISTRICT RESPONSES TO QUESTION 1

The 551 school district responses to the first survey question suggest rapid growth in the number of students and teachers using microcomputers in the classroom. As shown in Table 3, the total sample response indicates

Table 3: Number of Students Using Microcomputers*

	1981/82	1982/83	1983/84
Elementary (K-6)	121,441	174,590	199,554
Secondary (7-12)	128,340	171,434	200,561
Total (K-12)	249,781	346,024	400,115

*Table includes 551 school districts.

the number of students using microcomputers is expected to increase from 249,781 students in 1981/82 to over 400,000 in 1983/84. A slightly larger increase is expected among elementary students than at the secondary school level. The total sample survey response also indicates a similar pattern in the number of

teachers using microcomputers. Overall, the number of teachers using microcomputers is expected to increase from about 13K teachers in 1981/82 to just over 20K teachers in 1983/84 (Table 4). Again, a slightly larger increase

Table 4: Number of Teachers Using Microcomputers*

	1981/82	1982/83	1983/84
Elementary (K-6)	6,848	9,846	10,804
Secondary (7-12)	6,185	8,128	9,406
Total (K-12)	13,003	17,974	20,210

*Table includes 551 school districts.

in microcomputer utilization at the elementary school level is indicated. To place these figures in context, the number of students and teachers identified as using microcomputers in 1981/82 in the survey comprised about one-fifth of the students enrolled and one-sixth of the classroom teachers employed in New York State public schools outside the "Big-5" cities.

Since Question 1 was both a complex and demanding one, a large number of school districts did not report numbers for all three years. To get at a better basis for identifying the rate of which microcomputer utilization is increasing in New York State public school classrooms, analysis was narrowed to include only those districts reporting numbers for all three years. Table 5 shows the number of students identified by the 310 school districts (56.3% of the total sample). These school districts represented 75.6% of the total number of students using microcomputers in 1981/82 and 84.3% of the total number

Table 5: Number of Students Using Microcomputers*

	1981/82	1982/83	1983/84	% Increase
Elementary (K-6)	98,236	140,919	173,463	76.6%
Secondary (7-12)	90,720	127,089	163,858	80.6%
Total (K-12)	188,956	268,008	337,321	78.5%
Index (1981/2=1.0)	1.000	1.418	1.785	
% Growth		41.8%	25.9%	

*Table includes 310 school districts reporting for all 3 years.

of students reported for 1983/84. The overall expected rate of growth for these 310 districts is 78.5% from 1981/82 to 1983/84, with a slightly higher rate among secondary students than among elementary students. The annual rate of increase from 1981/82 to 1982/83 (41.8%), however, is somewhat greater than that from 1982/83 to 1983/84 (25.9%).

A very similar pattern emerges in analyzing the number of teachers using microcomputers identified by the 322 districts that responded for all three years (Table 6). These districts (58.4% of the sample) accounted for 73.9% of the total teachers reported for 1981/82 and 85.4% of those reported for 1983/84. The overall two-year growth rate is nearly 80% with a slightly

Table 6: Number of Teachers Using Microcomputers

	1981/82	1982/83	1983/84	% Increase
Elementary (K-6)	5,277	7,433	9,369	77.5%
Secondary (7-12)	4,331	5,719	7,891	82.2%
Total (K-12)	9,608	13,152	17,260	79.6%
Index (1981/2=1.0)	1.000	1.369	1.796	
% Growth		36.9%	31.2%	

*Table includes 322 school districts reporting for all 3 years.

higher growth rate in microcomputer utilization expected among the secondary teachers (82.2%) than among elementary teachers (77.5%). Here again, the annual rate of growth decreases from 36.9% from 1981/82 to 1982/83 to 31.2% from 1982/83 to 1983/84.

It is suggested that the higher growth rate reported for the first year may be attributable to the timing of the SICN Survey, which was distributed in late May 1982. The administrators responsible for completing the survey were likely to have a fairly reliable basis for estimating 1982/83 numbers, but may have tended to be more conservative in giving estimates for the following year.

A major implication of the growing numbers of students and teachers using microcomputers is that instructional microcomputing is becoming a relatively large scale phenomenon for New York State school districts. Table 7 shows the percent distribution of responding school districts by the number of elementary and secondary students involved in instructional microcomputing each year.

Table 7: Percent Distribution of School Districts by Number of Students* Using Microcomputers, 1981/82 to 1983/84

# of Students Using Micros	Elementary 1981/82	1982/83	1983/84	Secondary 1981/82	1982/83	1983/84
less than 100	57.7%	42.3%	39.2%	46.1%	34.1%	31.2%
101 to 500	24.0%	31.9%	31.6%	34.7%	38.3%	34.3%
More than 500	16.1%	24.5%	25.6%	16.0%	22.7%	27.4%
No Response	2.2%	1.3%	3.6%	3.2%	4.9%	7.1%

*No = 551

During the three-year period, the percentage of school districts with fewer than 100 elementary or secondary students using microcomputers declines nearly 20% and there is a 10% increase in the number of school districts with more than 500

students involved at each level. Similarly, Table 8 shows a 20% decline in the number of districts with fewer than 10 elementary and secondary teachers in-

Table 8: Percent Distribution of School Districts by Number of Teachers* Using Microcomputers, 1981/82 to 1983/84

# Teachers Using Micros	1981/82	1982/83	1983/84	1981/82	1982/83	1983/84
less than 10	77.3%	62.4%	57.7%	77.8%	65.0%	55.4%
11-50	16.3%	28.9%	33.4%	16.9%	27.8%	35.9%
more than 50	5.1%	6.7%	6.5%	3.3%	4.5%	5.4%
No Response	1.3%	2.0%	2.4%	2.0%	[illegible]7%	3.3%

*(N = 551)

volved in instructional computing. This decline is coupled with a substantial growth (from 16% to about 35%) in the percentage of districts with 11 to 50 teachers at each level.

BOCES RESPONSES TO QUESTION 1

Of the twenty-four (24) BOCES responding to the SICN Survey, twenty-one provided student or teacher numbers in response to Question 1. Of these, only seven BOCES reported elementary numbers and sixteen reported secondary numbers for all three years. Based on this limited response, the involvement of students with microcomputers (Table 9) is projected to more than

Table 9: Number of BOCES Students Using Microcomputers

	# BOCES Included	1981/82	1982/83	1983/84	% Increase
Elementary (K-6)	7	804	1835	1663	106.8%
Secondary (7-12)	16	1351	2093	2573	90.5%

double at the elementary level and to increase 90% among secondary students. The same BOCES reported (Table 10) a 21% increase in the number of elementary

Table 10: Number of BOCES Teachers Using Microcomputers

	# BOCES Included	1981/82	1982/83	1983/84	% Increase
Elementary (K-12)	7	132	125	160	21.2%
Secondary (7-12)	16	88	128	176	100.0%

teachers using microcomputers and a doubling of the number of secondary teachers involved.

"BIG-5" CITY RESPONSES

All five of the large city school districts (Buffalo, New York, Rochester, Syracuse, and Yonkers) responded to the SICN Survey. Only three of the large city school districts responded to Question 1; however, two of which reported only for the first two years. Relatively few students (Table 11) were identified as using microcomputers in 1981/82, but plans for substantial increases

Table 11: Number of Students Using Microcomputers - Big 5 Cities

	1981/82	1982/83	% Increase
Elementary (K-6)	3,250	13,000	300.0%
Secondary (7-12)	3,050	3,400	11.5%
TOTAL	6,250	16,400	162.4%

*Figures include Buffalo, Rochester and Yonkers only.

were indicated primarily at the elementary level. Similarly (Table 12), relatively few teachers were identified as using microcomputers in 1981/82 with substantial growth indicated for 1982/83 at the elementary level. For

Table 12: Number of Teachers Using Microcomputers - Big 5 Cities*

	1981/82	1982/83	% Increase
Elementary (K-6)	63	250	296.8%
Secondary (7-12)	57	49	- 14.0%
TOTAL	120	299	149.2%

*Figures include Buffalo, Rochester and Yonkers only.

New York City, a local school computer use survey was reported. This survey indicated some use of computers at nearly half (46.5%) of the city's schools (24.7% at the elementary level, 82.9% of the junior highs, and 97.8% of the high schools). In general, classroom use of microcomputers in the large city districts appears to be relatively well established and stable at the secondary level. Plans for substantial growth are indicated, focusing primarily on elementary schools.

MICROCOMPUTER ACQUISITION

Responses to the SICN Survey indicate the availability of nearly seven thousand microcomputers in 1981/82 and plans to acquire nearly as many units again during each of the next two school years. Apples, PETS, and TRS-80s emerged as the most popular types of microcomputers for instructional computing, but no clear movement toward standardization on any one brand. The availability and planned purchasing of microcomputers, as identified by the survey, are summarized for school districts, BOCES, and large cities.

School District Plans

To accommodate the anticipated growth of instructional computing, school districts plan to at least triple the availability of microcomputer hardware during the next two years. School districts were asked (Question 2) to indicate the availability of microcomputers by type during 1981/82 and then to indicate their plans for microcomputer hardware acquisition by type for 1982/83 and 1983/84. The school districts responding (Table 13) reported a total of

Table 13: Availability and Planned Acquisition of Microcomputers by Type

Type	1981/82	1982/83	1983/84
Apple	1,531	1,789	2,955
PET	2,283	2,006	1,591
TRS-80	1,530	1,111	863
Atari	62	90	76
Other	319	443	476
TOTAL	5,725	5,439	5,961

5,725 microcomputers in 1981/82 and plans to acquire an additional 11,400 microcomputers over the next two years. Apples, Commodore PETs, and Radio Shack TRS-80s appear to dominate the educational market place in New York. Based on the Survey responses, the Apple microcomputer appears to be growing in popularity. At the same time, 135 school districts (24.5%) reported plans to purchase multiple brands of microcomputers in 1982/83.

BOCES Plans

A much larger proportion of the BOCES responding to the survey completed the items dealing with the acquisition of microcomputers and related peripheral equipment than reported numbers of students and teachers using them. Like the school districts responding to the SICN Survey, BOCES agencies indicate plans (see Table 14) to nearly triple the availability of microcomputers from 1981/82

Table 14: Availability and Acquisition of Microcomputers

	1981/82	1982/83	1983/84
Apples	88	72	107
PET	17	21	16
TRS-80	31	12	50
Atari	4	6	3
Other	28	6	19
TOTAL	168	117	195

to 1983/84. Apples, TRS-80s, and PETs (in that order) appear to dominate instructional computing, accounting for 80% of the microcomputers on hand in 1981/82 and 90% of the planned purchases.

Large City Plans

All five cities indicated the 1981/82 availability of microcomputers by type (Question 2), two reported acquisition plans for 1982/83, and one for 1983/84. Between them, the large cities reported a total of 1056 microcomputers in 1981/82, of which Apples, PETs, and TRS-80s accounted for 96.4%. Buffalo and Rochester, with a combined 1981/82 total of 312 micros, together reported plans to purchase 304 microcomputers in 1982/83, an increase of 97.4%. Again, Apples, PETs, and TRS-80s accounted for 90.4% of the planned purchases.

PERIPHERALS

Question 3 asked respondents to identify the availability and planned acquisition of microcomputers peripheral equipment. A total of 1,394 microcomputer peripheral units were identified as being in use during 1981/82 along with plans to add another 1691 units over the next two years. Printers are by far the most popular type of peripheral equipment for instructional computing, accounting for 93.6% of the total. Plotters, Voice, Graphics Tablets, and Music/Synthesizers make up the relatively small balance in roughly equal numbers. The ratio of microcomputers to peripheral equipment units overall is 4.98 - to - 1.

SCHOOL DISTRICTS

The 551 responding school districts indicated 1,109 peripheral equipment units were available in 1981/82 and plans to more than double the availability of peripheral equipment during the next two years (Table 15). The most commonly available type of peripheral equipment is printers, which account for 91.8%

Table 15: School District Peripheral Equipment

	1981/82	1982/83	1983/84
Printers	1,026	762	661
Plotters	21	16	14
Voice	16	31	13
Graphics Tablets	25	21	13
Music/Syn	21	16	12
TOTAL	1,109	846	713

of all peripherals. Plotters, voice, graphics tablets, and music/synthesizers appear to be much less commonly available in instructional computing. Among printers, Commodore, EPSOM, and Radio Shack were the most frequently named manufacturers, followed by Apple and Centronics.

BOCES

Like the responding school districts, BOCES responses to Question 3 indicate printers are the most popular peripheral equipment item for microcomputers, followed (at a great distance) by graphics tablets. Survey responses indicate (Table 16) the availability of microcomputer peripherals will increase by 150% over the coming two school years.

Table 16: BOCES Peripheral Equipment

	1981/82	1982/83	1983/84
Printers	68	55	49
Plotters	1	1	0
Voice	1	0	0
Graphics Tablets	5	4	3
Music/Syn	1	0	0
TOTAL	76	60	52

"BIG-5" CITIES

As with the school districts and BOCES responding to the SICN Survey, printers are the most common type of peripheral unit associated with microcomputers (Question 3) in the Big-5 cities. For 1981/82 three of the five cities (Buffalo, New York, and Yonkers) reported a total of 209 peripherals, including 204 printers, two plotters, one Voice and two Music/Synthesizers. Buffalo reported plans to acquire 24 additional printers in 1982/83 and 38 printers in 1983/84, along with two graphics tablets each year.

MICROCOMPUTER REPAIR

Since the introduction of microcomputers to the classroom is a fairly recent phenomenon, it is not surprising that only 6% of the 551 responding school districts reported (Question 4) an in-house microcomputer repair capability and only 13% reported (Question 5a) plans to develop one in the future. Relatively few school districts (88) expressed a need for microcomputer repair training sessions for their repair technicians (Question 5b). Instead, nearly 85% of the responding districts reported (Question 5c) having access to an external repair service. When asked to indicate what type of repair service (Question 5c), 355 districts reported "commercial vendor", 224 reported "BOCES", 55 indicated their Regional Computer Center, and 17 districts indicated "other" (including a local repair service, a computer science teacher, and some districts that return malfunctioning units to the manufacturer).

Among the twenty-four responding BOCES, 40% (10) reported an in-house microcomputer repair capability (Question 4). Nine BOCES indicated plans to develop an in-house microcomputer repair service in the future, while seven did not (Questions 5a & 5b). A like number of BOCES expressed interest in training sessions for their repair personnel. Of the sixteen BOCES reporting no in-house repair capability, thirteen indicated access (Question 5) to a repair service (including five that utilize neighboring BOCES, six that rely on the Regional Computer Center, and eight that utilize commercial vendors).

Of the large cities, only Syracuse reported an in-house microcomputer repair capability (Question 4). Buffalo and Yonkers reported (Question 5a) plans to develop an in-house repair capability and Rochester indicated it is considering this possibility. All of these cities indicated a need for training sessions for their repair personnel (Question 5b). Three cities (Buffalo, New York, and Yonkers) indicated access to a microcomputer repair

service (Question 5c), Syracuse and Rochester not responding to this item. Rochester identified "BOCES" as one of its microcomputer repair resources, along with "commercial vendor" which was also identified by Buffalo and New York.

Because these survey questions did not distinguish between routine, preventative maintenance procedures and more serious kinds of repair problems, the responses may understate school district needs for technical assistance in the area of microcomputer maintenance and repair. Further, since most districts have only recently acquired microcomputers for classroom use, they have relatively little experience in their maintenance and care. It would be interesting to identify their interest and perceived need in another year or two.

SOFTWARE/COURSEWARE DEVELOPMENT

A major concern in instructional computing is the development of microcomputer software/courseware programs suitable for classroom use. The rapid growth of microcomputer technology has not been consistently complimented by the development of educational software. Respondents were asked (Question 6) to indicate what percentage of their microcomputer software materials are: a) locally developed, b) commercially developed, c) purchased from public agencies (e.g., BOCES, universities, MECC*), or d) other.

Averaging the percentages reported by the 551 public school districts, nearly 1/4 (24%) of the software materials being used by school districts is locally developed, while slightly more than half (55%) is commercially produced. About 17.5% of the materials is reportedly purchased from public agencies. "Other" sources (including "microcomputer clubs", "swapped with other schools", "trade programs", magazine articles", etc.) were reported as accounting for 3% of the materials in use. BOCES responses indicated that most of their microcomputer course materials (56%) are commercially developed, 34% is purchased from public agencies and only 8% is locally developed on the average. These patterns of software/development are summarized in Table 17.

Table 17: Software/Courseware Development Patterns

	School Districts	BOCES	"Big-5" Cities
Commercially Developed	55%	56%	48%
Locally Developed	24%	8%	25%
Public Agencies	18%	34%	27%
Other	3%	2%	0%

The large cities are very similar to smaller school districts and BOCES in their reliance on outside resources for microcomputer courseware materials

*(Minnesota Educational Computing Consortium)

(Question 6). Commercially developed materials were identified in the aggregate as contributing nearly half (48%) of the available software. About one-fourth (25%) of the microcomputer software is identified as "locally developed", while the remaining 27% is identified as "purchased from public agencies".

Question 7 asked respondents to indicate (on a scale from 1 to 5) their level of satisfaction with the existing software/courseware development pattern. In general, the average of responses tended toward the scale's midpoint (see Table 18) indicating neither very satisfied nor the opposite.

Table 18: Level of Satisfaction with Software/Courseware Development

	(Not Satisfied) 1	2	3	4	(Very Satisfied) 5	N	$\bar{X}$
School Districts	6%	15%	47%	25%	7%	479	3.10
BOCES	-	32%	36%	27%	5%	22	3.05
"Big-5" Cities	25%	-	50%	25%	-	4	2.75

Interestingly, on the basis of this limited analysis, lower levels of satisfaction appear to correlate with larger organizational units.

INSTRUCTIONAL APPLICATIONS

Question 8 asked respondents to indicate which instructional applications of microcomputers are being implemented at the elementary and secondary school levels. In general, the responses indicate that microcomputers are being used primarily to reinforce and enrich classroom instruction. There is also a fairly strong emphasis on computer literacy.

At the elementary level (Table 19) there is a high level of consistency

Table 19: Elementary School Instructional Computing Applications (Rank Ordered)

	School Districts	BOCES	Large Cities	Total Sample
Drill & Practice	349	8	5	362
Educational Games	300	6	3	309
Tutorial	252	7	5	264
Computer Literacy	225	6	3	234
Enrichment	219	4	3	226
Problem Solving	198	7	3	208
Simulations	167	7	4	178
Programming	140	3	2	145
Word Processing	24	1	0	25
Other	20	2	0	22
Business Education	9	1	0	10

among the different segments of the survey sample in the instructional computing applications reported. Drill and practice, educational games, tutorial, computer literacy and enrichment are the applications most commonly in use.

The reported pattern of instructional applications of microcomputers at the secondary level is summarized in Table 20. We find again, a high degree of consistency among the different types of school agencies reporting. A much heavier emphasis emerges on programming and computer literacy than is evident at the elementary

Table 20: Secondary Instructional Computing Applications (Rank Ordered)

	School Districts	BOCES	Large Cities	Total Sample
Programming	406	15	5	426
Computer Literacy	376	15	5	396
Educational Games	331	12	5	348
Drill & Practice	326	14	5	345
Problem Solving	313	14	4	331
Simulations	263	12	5	280
Tutorial	260	13	5	278
Enrichment	235	9	4	248
Business Education	187	17	4	208
Word Processing	184	15	3	202
Other	31	3	0	34

level, indicating a more career oriented emphasis for instructional computing at secondary schools. There is also a clear indication that microcomputers are being used to reinforce and enrich classroom instruction.

MANAGEMENT APPLICATIONS

In contrast to the widespread use of microcomputers in schools for purposes related to classroom instruction, relatively little use of micros was reported in Question 9 for management purposes. BOCES organizations reported a much higher level of microcomputer utilization for such things as

Table 21: Management Applications for Microcomputers
(% of samples reporting management applications by type)

	School Districts	BOCES	Large Cities	Total Sample
Managing Instruction	13.6%	20.8%	20.0%	14.7%
Testing	11.6%	8.3%	20.0%	12.2%
Student Record Keeping	21.8%	41.7%	20.0%	23.7%
Business Applications	7.3%	20.8%	20.0%	8.4%

student record keeping, managing instruction, business applications (e.g., negotiations, accounts payable, budgeting, etc.), and test scoring than did school districts or the large cities. At the same time, there is an apparent consistency in terms of the relative emphasis on different management applications reported by different segments of the survey sample (see Table 21).

EVALUATION AND INFORMATION

In spite of the relatively recent introduction of microcomputers into the classroom, nearly one-fourth (122) of the school districts responding to the survey reported (Question 12a) they are conducting local evaluation or research efforts to assess the effectiveness of instructional computing and a like number indicated (Question 12b) willingness to share this information. Of the twenty-four BOCES, nearly half (10) indicated they are conducting evaluation or research efforts to assess the effectiveness of instructional computing and nine expressed a willingness to share this information. Three of the five large city school districts (New York, Rochester, and Yonkers) reported having evaluation research efforts to assess the effectiveness of microcomputers in instruction (Question 12a) and a willingness to share the results of this research (Question 12b).

At the same time, less than 1% (7) of the school districts, and none of the large cities, indicated (Question 13) that they publish an instructional computing newsletter. By contrast, one-third (8) of the responding BOCES indicated they have an instructional computing newsletter in place. The relatively higher incidence of BOCES having instructional computing newsletters may indicate that many school districts tend to rely on BOCES to provide this kind of support service for their classroom teachers.

APPENDIX A

STATEWIDE INSTRUCTIONAL COMPUTING NETWORK

1ST ANNUAL SURVEY

QUESTIONNAIRE

STATEWIDE INSTRUCTIONAL COMPUTING NETWORK (SICN)

1st ANNUAL SURVEY

of

INSTRUCTIONAL COMPUTING PRACTICES/PLANS

OF

New York State School Districts

School District Name: _____

Chief School Officer or Designee: _____
(person completing survey)

Phone Number: Area Code ( ) _____

A. HARDWARE ACQUISITION AND MAINTENANCE *(The following information is needed for SICN to work with the State Office of Government Services to strengthen State Contract bidding for microcomputers as it relates to instructional applications/needs; and to assess the need for microcomputer maintenance/repair services.)*

1. Please indicate/estimate the number of students and teachers using computers in your schools at present and your future plans.

	At present 1981-82		Projection for 1982-83		Projection for 1983-84	
	Students	Teachers	Students	Teachers	Students	Teachers
Elementary (K-6)						
Secondary (7-12)						

2. Please indicate the number and type of instruction microcomputers currently in use and your plans for microcomputer acquisition.

Type of Hardware	Currently Available # and Budget	Projection for 1982/83 # and Budget	Projection for 1983/84 # and Budget
TRS-80			
*APPLE			
PET			
ATARI			
Other _____			

*Including monitors and disk drives.

3. Please indicate the number and type of microcomputer peripherals currently in use and your plans for acquisition.

	Manufacturer	Currently Available # and Budget	Projection for 1982/83 # and Budget	Projection for 1983/84 # and Budget
Printers				
Plotters				
Voice				
Graphics Tablet				
Music/Syn				

4. Do you repair your own microcomputers in-house? Yes_____ No_____

5. a. If not, do you plan to do so in the future? Yes_____ No_____

b. (If so) Will you need training sessions for your repair personnel? Yes_____ No_____

c. (If not) Do you have access to a repair service? Yes_____ No_____

Please indicate which type _____ local BOCES

_____ Regional Computer Center

_____ Commercial Vendor

_____ Other (Please specify)

_____

B. SOFTWARE/COURSEWARE DEVELOPMENT *(The following information is needed for SICN to facilitate networking and resource sharing among school districts.)*

6. Approximately what percentage of your microcomputer software/courseware materials are:

a. developed locally* _____ %

b. commercially developed _____ %

c. purchased from public agencies (ex. BOCES, universities, other schools) _____ %

d. other (please specify) _____ %

7. How satisfied are you with the present arrangement?

(Please circle: Very Satisfied 5 4 3 2 1 Not Satisfied)

*Please attach a descriptive listing of your titles, if available.

8. Which of the following instructional computing applications are now in operation in your schools?

	Elementary (K-6)	Secondary (7-12)
Drill and Practice		
Tutorial		
Simulations		
Educational Games		
Problem Solving		
Computer Literacy		
Programming		
Business Education		
Word Processing		
Enrichment		
Other		

9. Is your school district using microcomputers for management applications?

a. Managing instruction Yes_____ No_____

b. Testing Yes_____ No_____

c. Student record keeping Yes_____ No_____

d. Other:

C. INSERVICE EDUCATION *(The following information will be used by SICN to identify people across the state who could/should participate in the design of a "model" for staff development and to develop a stateside human resource directory.)*

10. Who are the people in your area that are doing staff development/ inservice training related to computers? (This may include outside agencies or consultants.)

Name(s)	District/Organization and Address
**	
**	
**	
**	

11. Who is (are) the person(s) responsible for planning, coordinating, supervising, and/or evaluating instructional computing in your district?

Name(s)	Title(s)

12. Is your district conducting any local evaluation or research efforts to assess the effectiveness of computers in instruction? Yes____ No____
Would you be willing to share such information? Yes____ No____

D. INFORMATION DISSEMINATION *(This information will be used by SICN to facilitate information-sharing among school districts across the state.)*

13. Does your school district publish an instructional computing newsletter that you feel could/should be shared with other districts in the state? Yes_____ No_____ (If yes, please attach a recent issue.)

COMMENTS: (Please use this space to add any comments or information you feel would be useful to the Statewide Instructional Computing Network in its efforts to advance the state of the art.)

_____

_____

_____

_____

_____

_____

_____

_____

THANK YOU for taking the time to respond to the foregoing questions. If you wish to receive a copy of the survey results, please so indicate and place your mailing address (or address label) in the space below.

I would like to receive a copy of the survey results.

Mailing Address:

_____

_____

_____

_____

PLEASE RETURN THIS COMPLETED SURVEY TO YOUR LOCAL DISTRICT SUPERINTENDENT.

APPENDIX B

ROSTER OF DELEGATES

TO THE

STATEWIDE INSTRUCTIONAL COMPUTING NETWORK

DIRECTORY OF NETWORK DELEGATES

Steering Committee

Dr. Burton Ramer, Chairman
Oswego County BOCES

Mr. Al Bartolo
Office of Community District 31

Dr. H. Clay Bishop
Washington-Warren-Hamilton-Essex BOCES

Dr. William Callahan
Nassau County BOCES

Mr. Gerald T. Cummings
Monroe BOCES No. 1

Mr. Douglas A. David
Orleans-Niagara BOCES

Dr. Joseph E. Donohue
Yonkers Public Schools

Mr. William Halligan
Bureau of Educational Communications
The State Education Department

Mr. Dennis B. Kagel
Bureau of Business Education
The State Education Department

Mr. Walter Koetke
Putnam-Northern Westchester BOCES

Dr. Norman Kurland
Adult Learning Services
The State Education Department

Dr. Campion Leczinsky
The State Education Department

Mr. Warren Leib
Pulaski Central School

Mr. Ed Mascadri
Hilton Central School District

Mrs. Patricia Mautino
Oswego County BOCES

Dr. James Monk
Brewster Central Schools

Mr. Dominick Mupo
Nassau County BOCES

Mr. Lawrence G. Page
Central Technical Vocational Center

Mr. Zebulon Robbins, Jr.
Albany-Schenectady-Schoharie BOCES

Mr. Robert E. Taylor
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